

# A field identification manual for the commercially important shrimp species of Gujarat

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**Central Marine Fisheries Research Institute**  
(Indian Council of Agricultural Research)

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## Foreword

The Central Marine Fisheries Research Institute (CMFRI) since its inception in 1947, has been collecting vital information on various aspects of marine living resources such as biological information on constituent species, their exploitation status, new and exploitable resources, marine biodiversity and their conservation, environmental features, information on fishing villages, landing centres, fisher population, socio-economics and open sea mariculture. Gujarat is the largest maritime state of India having longest coastline of about 1600 km, broadest continental shelf area of 1.6 lakh sq. km and an exclusive economic zone of 2.14 lakh sq. km. the state of Gujarat has been bestowed with highly productive and diversified marine ecosystems. Fisheries play a significant role in the nutritional security, employment generation, livelihood and foreign exchange earnings of the region. CMFRI made its presence felt in Gujarat in 1954 with the inception of its Survey Centre at Veraval. This centre has made tremendous contributions to the marine fisheries research of the region since then and has grown to become one of the three regional centres of C M F R I .

Shrimp is one of the major resources of the Gujarat coast contributing significantly to the foreign exchange earnings by export (about 80 Crores Indian rupees). However, shrimps are misclassified and segregated wrongly at the field level due to confusing morphological characteristics. To solve this problem a field identification manual for the commercially important shrimp species has been published in Gujarati language. The manual contains a pictorial depiction of commercially available shrimp species with easily demarcating and identifiable morphological characteristics in vernacular language. I complement the authors, Gyanaranjan Dash, Swatipriyanka Sen, Sreenath K.R., Mohommed Koya, Suresh Kumar Mojada, Mahendra Fofondi, and Sangita Bharadiya for bringing out this timely publication.

I hope this comprehensive publication will be of great help to all the stakeholders of the region.

Dr. G. Syda Rao  
Director  
CMFRI, Cochin



# CONTENTS

Introduction .....	1
Technical terms .....	2
<i>Metapenaeus monocerus</i> .....	3
<i>Metapenaeus brevicornis</i> .....	4
<i>Metapenaeus dobsoni</i> .....	5
<i>Metapenaeus affinis</i> .....	6
<i>Metapenaeus kutchensis</i> .....	7
<i>Parapenaeopsis stylifera</i> .....	8
<i>Parapenaeopsis hardwickii</i> .....	9
<i>Parapenaeopsis sculptilis</i> .....	10
<i>Parapenaeopsis maxillipedo</i> .....	11
<i>Metapenaeopsis stridulans</i> .....	12
<i>Metapenaeopsis tolensis</i> .....	13
<i>Penaeus monodon</i> .....	14
<i>Penaeus semisulcatus</i> .....	15
<i>Marsupenaeus japonicus</i> .....	16
<i>Meliceratus canaliculatus</i> .....	17
<i>Meliceratus latisulcatus</i> .....	18
<i>Fenneropenaeus indicus</i> .....	19
<i>Fenneropenaeus merguensis</i> .....	20
<i>Fenneropenaeus penicillatus</i> .....	21
<i>Solenocera choprai</i> .....	22
<i>Solenocera crassicornis</i> .....	23
<i>Solenocera hextii</i> .....	24
<i>Acetes</i> spp. ....	25
<i>Exhippolysmata ensirostris</i> .....	26
<i>Nematopalaemon tenuipis</i> .....	27

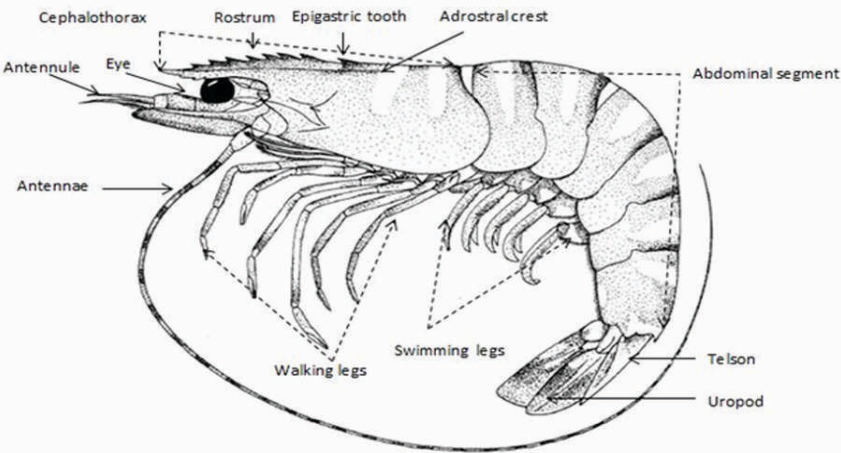
# Introduction

Gujarat is one of the most important maritime states of the country owing to its extensive marine fishery resources. It has the longest coastline (1600 Km) among all the maritime states, broadest continental shelf area (1, 64,183 sq. Km) forming nearly 33% of the total continental shelf area and an exclusive economic zone of 2.14 lakh sq. Km which is nearly 11% of that of the country. Diverse kind of wetlands such as salt marshes, sand belts, coral reefs, tidal mud flats etc. adds to its richness in terms of productivity as these eco habitats are prime breeding and nursery grounds of various marine biota some of them being unique to Gujarat waters. The marine fisheries production from the Gujarat is to the tune of 5 lakh tons which contributes 1.69 % to the state GDP and the sector provides employment to over 4, 00,000 people directly and indirectly.

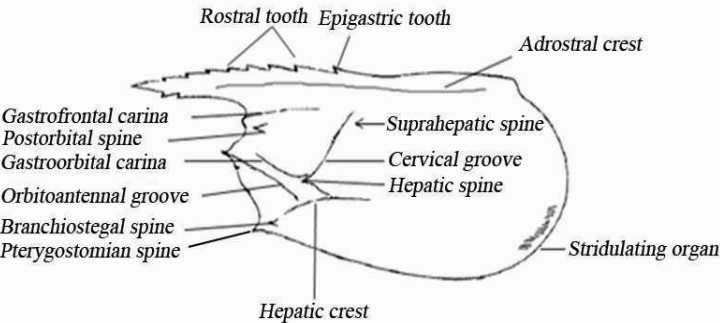
Shrimps are one of the major marine resources of the Gujarat coast, forming nearly 18% of the total marine fish production. The annual shrimp export is to the tune of about 4300 tons generating foreign revenue of about 80 crores. The Ginger prawn (*Metapenaeus kutchensis* George, George and Rao 1963), a commercially important prawn is endemic to Gujarat and a seasonal fishery for this is in existence since long back. Shrimps are exploited in Gujarat mainly by the mechanized multiday trawlers whereas bulk of the non-penaeid prawn landing comes from mechanized dol netters, a typical fishing gear limited mainly to south Gujarat and north Maharashtra.

However, many time these shrimps are misclassified and segregated wrongly at the field level due to confusing morphometric characteristics. Though scientific descriptions are available, there is a dearth of information in the vernacular language which makes the identification process cumbersome for a common local user. Therefore, the present publication was prepared to build a clear scientific understanding among the common users like processors, students, field staffs etc. and a comprehensive description of the striking taxonomic characters has been given to minimize the difficulties and error in the identification of these major fisheries resource at the field level. In this document easily identifiable unique taxonomic character along with their pictorial description (Viz. *Petasma* and *Thelycum*) has been given to ease the process of identification by comparing the similarities and dissimilarities among the confusing species. A total of 25 species of shrimps belonging to 8 genera (*Penaeus*, *Metapenaeus*, *Parapenaeopsis*, *Metapenaeopsis*, *Solenocera*, *Exhippolysmata*, *Nematopalaemon* and *Acetes*) under 5 families (*Penaeidae*, *Solenoceridae*, *Sergestidae*, *Hippolytidae* and *Palaemonidae*) have been described in the document.

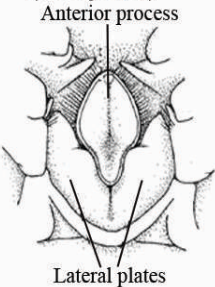
# Technical terms



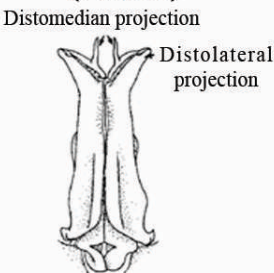
## Carapace



## Female reproductive organ (Thelycum)



## Male reproductive organ (Petasma)





# *Metapenaeus monocerus*

Trade name: Brown shrimp

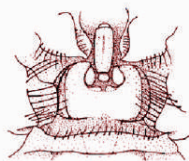


## Identification Characteristics:

- ✦ Rostral tooth present on dorsal margin only
- ✦ Rostrum straight without any crest
- ✦ Rostrum projecting beyond the antennular peduncle
- ✦ Branchiocardiac carina distinct, extending from posterior margin of carapace to the hepatic spine
- ✦ Last pereopod reaches a little beyond the middle of antennal scale
- ✦ In adult males distomedian projections of petasma greatly swollen and bulbiform
- ✦ In females, anterior plate of thelycum long and deeply grooved; lateral plates with strongly raised lateral margins
- ✦ In adult males, merus of fifth pereopod with a proximal notch followed by a long, inwardly curved spiniform process and a row of tubercles



Petasma



Thelycum



Fifth pereopod

## *Metapenaeus brevicornis*

Trade name: Yellow shrimp

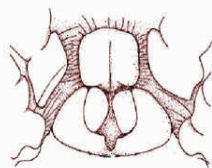


### Identification Characteristics:

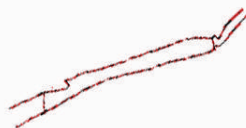
- ✦ Rostral tooth present on dorsal margin only but toothless towards the distal half
- ✦ Rostrum straight with noticeable crest
- ✦ Rostrum not projecting beyond the second segment of the antennular peduncle
- ✦ Branchiocardiac carina not reaching half of the carapace
- ✦ Last pereopod cross middle of antennal scale
- ✦ In males, each distomedian projection of petasma with a long and slender apical filament
- ✦ In females, anterior plate of thelycum large square and grooved; lateral plates boomerang shaped and enclosing 2 pear-shaped plates
- ✦ In males, merus of fifth pereopod with 1 tubercle.



Petasma



Thelycum



Fifth pereopod

## *Metapenaeus dobsoni*

Trade name: Kadal shrimp



### Identification Characteristics:

- ✦ Rostral tooth present on dorsal margin only
- ✦ Rostrum slightly curved without noticeable crest
- ✦ Rostrum projecting beyond antennular peduncle
- ✦ Branchiocardiac carina distinct, extending from posterior margin of carapace to the middle of carapace
- ✦ Last pereopod fall short of middle of antennal scale
- ✦ In males, basal spine of third pereopod extremely long and barbed, and distomedian projection of petasma with short filaments.
- ✦ In females, fifth pereopod often reduced to coxa and basis; thelycum with a long, grooved tongue-like anterior plate partially ensheathed in a horse-shoe-like process formed by the lateral plates
- ✦ In male merus of fifth pereopod with 1 or 2 large, triangular teeth.



Petasma



Thelycum



Fifth pereopod



## *Metapenaeus affinis*

Trade name: King Prawn

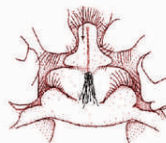


### Identification Characteristics:

- ✦ Rostral tooth present on dorsal margin only
- ✦ Rostrum slightly curved without crest reaching upto the 3rd article of the antennular peduncle
- ✦ Mid-dorsal carination of abdomen starts from 2nd segment
- ✦ Branchiocardiac carina slightly sinuous, extending from posterior margin of carapace almost to hepatic spine
- ✦ Last pereopod extending beyond the antennal scale
- ✦ In adult males, distomedian projections of petasma crescent-shaped
- ✦ In females, anterior plate of thelycum tongue shaped deeply grooved longitudinally and considerably wider posteriorly; posterior plate cut into two segments with conspicuous tuft of setae between them
- ✦ In adult males, merus of fifth pereopod with a notch, followed by a tubercle



Petasma



Thelycum



Fifth pereopod

# *Metapenaeus kutchensis*

Trade name: Ginger Prawn



## Identification Characteristics:

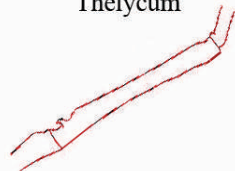
- ✦ Rostral tooth present on dorsal margin only
- ✦ Rostrum straight with a small crest extending slightly beyond the antennular peduncle
- ✦ Middorsal carination of abdomen starts from 4th segment
- ✦ Branchiocardiac carina distinct, extending from posterior margin of carapace almost to hepatic spine
- ✦ Last pereopod reaches a little beyond the middle of antennal scale
- ✦ In adult males, distomedian projections of petasma more transversely placed with broad distal end and narrow proximal end
- ✦ In females, anterior plate of thelycum deeply grooved longitudinally and considerably wider posteriorly; posterior plate cut into two segments without conspicuous tuft of setae between them
- ✦ In adult males, merus of fifth pereopod with a small notch, followed by a small tubercle.



Petasma



Thelycum



Fifth pereopod

## *Parapenaeopsis styliфера*

Trade name: Kiddi shrimp



### Identification Characteristics:

- ✦ Rostrum sigmoid over reaching tip of the antennular peduncle and toothless in distal half or more.
- ✦ Antennular flagella not banded.
- ✦ Longitudinal suture long reaching 2/3 of carapace length.
- ✦ Telson armed with 4 pair of lateral fixed spine
- ✦ Epipod and basial spine present on first and second pereopods but absent on third pereopod
- ✦ In males, distolateral projection of petasma is slender, hornlike and straight.
- ✦ In females, anterior plate of thelycum square shaped with a stem like posterior process



**Petasma**

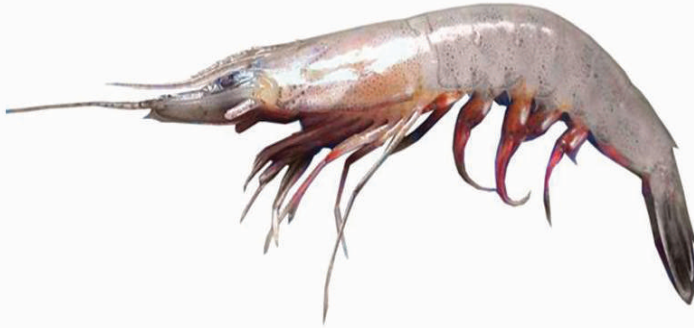


**Thelycum**



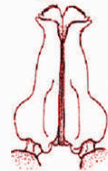
## *Parapenaeopsis hardwickii*

Trade name: Spear shrimp

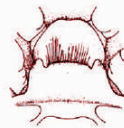


### Identification Characteristics:

- ✦ Rostrum upcurved distally over reaching tip of the antennular peduncle and toothless in distal  $\frac{1}{2}$  or less
- ✦ Antennular flagella long and banded
- ✦ Longitudinal suture long reaching  $\frac{3}{4}$  or more of carapace length
- ✦ Telson armed with 4 pair of lateral movable spine
- ✦ Epipod and basial spine present on first and second pereopods but absent on third pereopod
- ✦ In males, distomedian projection of petasma is wing like
- ✦ In females, anterior plate of thelycum concave rounded anteriorly, posterior plate with a pair of anterolateral tooth like projections



Petasma



Thelycum

## *Parapenaeopsis sculptilis*

Trade name: Rainbow shrimp



### Identification Characteristics:

- ✦ Rostrum sigmoid over reaching tip of the antennular peduncle and toothless in distal half or less.
- ✦ Body with complete dark transverse bands.
- ✦ Longitudinal suture long reaching  $\frac{2}{3}$  of carapace length.
- ✦ Telson is unarmed.
- ✦ Epipod and basial spine present on first and second pereopods but absent on third pereopod
- ✦ In males, distomedial projection of petasma is rabbit ear shaped.
- ✦ In females, anterior plate of thelycum rounded distally and broadly articulated with posterior plate which is having a tuft of long setae.



Petasma



Thelycum

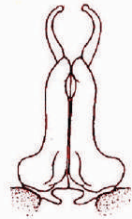
## *Parapenaeopsis maxillipedo*

Trade name: Torpedo shrimp



### Identification Characteristics:

- ✦ Rostrum straight with uplifted tip reaching 3rd antennular peduncle and toothless in distal 1/4
- ✦ Body with incomplete dark transverse bands restricted to dorsal surface
- ✦ Longitudinal suture long reaching 1/3 to 1/2 of carapace length
- ✦ Telson is without any spine.
- ✦ Epipod and basal spine present on first and second pereopods but third pereopod is also having basal spine
- ✦ In males, distolateral projection of petasma is slender horn like
- ✦ In females, anterior plate of thelycum is subquadrate. A median tuft of long setae is present behind the thelycum



Petasma



Thelycum



## *Metapenaeopsis stridulans*

Trade name: Fiddler shrimp



### Identification Characteristics:

- ✦ Rostrum straight or slightly upcurved reaching almost to tip of antennular peduncle
- ✦ Penultimate tooth generally anterior to orbital margin of carapace
- ✦ Stridulating organ is straight consisting of 5-7 ridges
- ✦ In males, petasma is asymmetrical. Right distoventral projection is short and having few apical process and left distoventral projection is having many apical processes
- ✦ In females, thelycal plate is subquadrate and intermediate plate is trapezoidal



Petasma



Thelycum



Stridulating organ

## *Metapenaeopsis tolensis*

Trade name: Tolo valvet shrimp

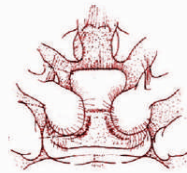


### Identification Characteristics:

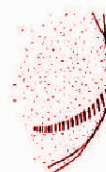
- ✦ Rostrum straight or slightly upcurved reaching to the 2nd antennular segment.
- ✦ Penultimate tooth in the same level to orbital margin of carapace.
- ✦ Stridulating organ is curved consisting of 14-22 ridges.
- ✦ In males, petasma is asymmetrical. Right distoventral projection is short and having few apical process and left distoventral projection is broadly swollen having many apical processes.
- ✦ In females, thelycal plate is subquadrate and intermediate plate is trapizoidal



Petasma



Thelycum



Stridulating organ

## *Penaeus monodon*

Trade name: Tiger shrimp



### Identification Characteristics:

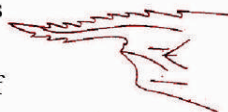
- ✦ Rostral tooth present on both the side with three tooth on ventral side.
- ✦ Hepatic crest straight and horizontal
- ✦ Adrostral groove shallow and does not extend beyond the rostrum
- ✦ Post rostral crest well developed almost reaching posterior margin with a distinct median groove
- ✦ No bands on antennae
- ✦ Fifth periopod without exopod
- ✦ In males, Petasma with distomedian projections slightly overhanging distal margin of costa
- ✦ In females, median margins of lateral plates of Thelycum form tumid lip like structure



Petasma



Thelycum



Horizontal hepatic crest of carapace

## *Penaeus semisulcatus*

Trade name: Flower Prawn

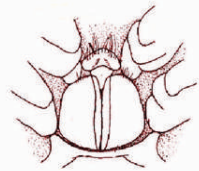


### Identification Characteristics:

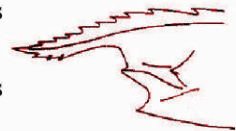
- ✦ Rostral tooth present on both the side with three tooth on ventral side
- ✦ Hepatic crest straight and sloping anteroventrally
- ✦ Adrostral groove deep and extend up to half the way of carapace
- ✦ Post rostral crest well developed almost reaching posterior margin
- ✦ Bands are present on antennae
- ✦ Fifth periopod with exopod
- ✦ In males, Petasma with distomedian projections reaching as far as costa
- ✦ In females, median margins of Thelycum lateral plates form tumid lip like structure



Petasma



Thelycum



Sloping Hepatic crest of carapace



## *Marsupenaeus japonicus*

Trade name: Kuruma shrimp



### Identification Characteristics:

- ✦ Rostral tooth present on both the side with one teeth on ventral side
- ✦ Hepatic crest straight upto the base of antennal crest and then slopping anterioventrally
- ✦ Adrostral groove wide and extend up to posterior margin of carapace
- ✦ Post rostral crest well developed as far as adrostral groove with a deep median groove
- ✦ Gastrofrontal crest present
- ✦ Telson with 3 pairs of movable spines
- ✦ In males, Petasma with long distomedian projections distinctly overhanding distal margins of costa
- ✦ In females, Thelycum without lateral plates but with a pouch widely open anteriorly
- ✦ last abdominal band discontinuous



Petasma



Thelycum



Discontinuous last abdominal band



Armed Telson

## *Meliceratus canaliculatus*

Trade name: Witch Prawn



### Identification Characteristics:

- ✦ Rostral tooth present on both the side with one teeth on ventral side
- ✦ Hepatic crest straight upto the base of antennal crest and then slopping anterioventrally
- ✦ Adrostral groove extend up to posterior margin of carapace
- ✦ Post rostral crest well developed as far as adrostral groove with a deep median groove
- ✦ Gastrofrontal crest is present
- ✦ Telson is unarmed
- ✦ In males, Petasma with short distomedian projections, reaching or slightly overhanging distal margin of costa
- ✦ In females, Thelycum with lateral plates, their anteromedian margins diverging, then turning in a broad arc
- ✦ last abdominal band continuous reaching ventral margin



Petasma



Thelycum



Continuous last abdominal band



Unarmed Telson

## *Meliceratus latisulcatus*

Trade name: Western king Prawn



### Identification Characteristics:

- ✦ Rostral tooth present on both the side with one teeth on ventral side
- ✦ Adrostral groove extend up to posterior margin of carapace.
- ✦ Gastrofrontal crest present
- ✦ Hepatic crest straight upto the base of antennal crest and then slopping anterioventrally
- ✦ Telson armed with 3 pairs movable spines
- ✦ In males, Petasma with distomedian projections reaching to or slightly overhanging distal margin of costa
- ✦ In females, Thelycum anterior process raised, forming 2 subtriangular projections (crown shaped).
- ✦ Body without any bands. Pleura of first 5 abdominal segments each with a short vertical stripe; a diagonal stripe of the same colour may be present on last segment



Petasma



Thelycum



Carapace

## *Fenneropenaeus indicus*

Trade name: Indian white Prawn



### Identification Characteristics:

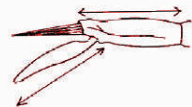
- ✦ Rostral tooth present on both the side with 4-6 tooth on ventral side
- ✦ Rostral crest feebly elevated but not triangular in profile
- ✦ Adrostral crest and groove reaching just beyond epigastric tooth
- ✦ Gastrofrontal and Hepatic crest absent
- ✦ Gastroorbital crest extending over posterior 2/3 of distance between hepatic spine and orbital margin
- ✦ Dactylus of third maxilliped of adult male is as long as the length of propodus
- ✦ In males, Petasma with distomedian projections overhanging distal margin of costa
- ✦ In females, thelycum with lateral plates, their median margins forming tumid lips shape



Petasma



Thelycum



Third maxilliped



Carapace



## *Fenneropenaeus merguensis*

Trade name: Banana shrimp

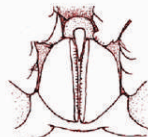


### Identification Characteristics:

- ✦ Rostral tooth present on both the side with 4-6 tooth on ventral side.
- ✦ Rostral crest considerably high and triangular in profile
- ✦ Adrostral crest and groove not reaching as far as epigastric tooth
- ✦ Gastrofrontal and Hepatic crest absent
- ✦ Gastroorbital crest extending middle third to half of distance between hepatic spine and orbital margin
- ✦ Dactylus of third maxilliped of adult male is smaller than the length of propodus
- ✦ In males, Petasma with distomedian projections overhanging distal margin of costa
- ✦ In females, Thelycum with lateral plates, their median margins forming tumid lips shape



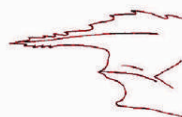
Petasma



Thelycum



Third maxilliped



Carapace

## *Fenneropenaeus penicillatus*

Trade name: Red tail Prawn



### Identification Characteristics:

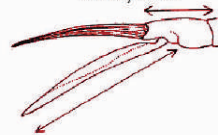
- ✦ Rostral tooth present on both the side with 4-6 tooth on ventral side
- ✦ Blade of the rostral convex becoming relatively high in large specimen
- ✦ Adrostral crest and groove extending just beyond epigastric tooth
- ✦ Gastrofrontal and Hepatic crest absent
- ✦ Gastroorbital crest extending middle third to half of distance between hepatic spine and orbital margin
- ✦ Dactylus of third maxilliped of adult male is larger than the length of propodus
- ✦ In males Petasma with very short distomedian projections, generally not reaching distal margin of costa
- ✦ In females, Thelycum with lateral plates, their median margins forming tumid lips shape



Petasma



Thelycum



Third maxilliped



Carapace

## *Solenocera choprai*

Trade name: Ridgeback shrimp



### Identification Characteristics:

- ✦ Rostrum reaching to the middle to 3/4th of the eye
- ✦ Postrostral crest considerably elevated reaching posterior margin
- ✦ Long cervical groove reaching close to the dorsal margin
- ✦ Last two pair of pereopod well developed
- ✦ Post orbital spine present
- ✦ Suprahepatic spine absent
- ✦ Branchiocardiac crest oblique
- ✦ Hepatic crest curved downward anteriorly forming a small loop
- ✦ Telson trifurcated
- ✦ Fifth pereopod is having a coxal spine



Carapace



Trifurcated Telson

## *Solenocera crassicornis*

Trade name: Coastal mud Prawn



### Identification Characteristics:

- ✦ Rostrum reaching to the distal margin of the eye.
- ✦ Postrostral crest is low reaching posterior margin.
- ✦ Long cervical groove reaching close to the dorsal margin
- ✦ Last two pair of pereopod well developed
- ✦ Post orbital spine present
- ✦ Suprahepatic spine absent
- ✦ Branchiocardiac crest slightly sinuous
- ✦ Hepatic crest curved downward anteriorly forming a broadly rounded loop
- ✦ Telson is not trifurcated
- ✦ Fifth pereopod is without a coxal spine



Carapace



Unarmed Telson



## *Solenocera hextii*

Trade name: Deepsea mud shrimp



### Identification Characteristics:

- ✦ Rostrum reaching to the distal margin of the eye
- ✦ Postrostral crest considerably elevated reaching posterior margin
- ✦ Long cervical groove reaching close to the dorsal margin
- ✦ Last two pair of pereopod well developed
- ✦ Post orbital spine present
- ✦ Suprahepatic spine present
- ✦ Branchiocardiac crest L shaped
- ✦ Hepatic crest curved downward anteriorly forming a small loop
- ✦ Telson trifurcated
- ✦ Fifth pereopod is having a coxal spine



Carapace



Trifurcated Telson

## *Acetes spp.*

**Trade name: Paste shrimp**



### **Identification Characteristics:**

- ✦ Small sized shrimps with poorly developed crests and grooves on carapace
- ✦ Pleura of first abdominal segment covering the somite of second abdominal segment
- ✦ Rostrum shorter than eye stalk
- ✦ In males, lower antennular flagella with a clasping organ
- ✦ 4th and 5th pair of pereopods entirely absent except for a pair of protuberances in male
- ✦ Male genital organ present on first pleopod
- ✦ First maxillae and first maxillipeds without palp
- ✦ Second maxillae with a single undivided lobe

## *Exhippolysmata ensirostris*

**Trade name: Hunter shrimp**



### **Identification Characteristics:**

- ✚ Rostrum straight and longer than carapace with an elevated basal crest of 7-12 teeth on the dorsal side
- ✚ Teeth is present both in the ventral and dorsal side
- ✚ Second abdominal segment overlaps first and third segments
- ✚ Pleura of the 5th abdominal segment sharply pointed
- ✚ Only first two pereopods are chelated and third pair of pereopod without pincer
- ✚ 2nd pair of pereopod with small pincers and the carpus is subdivided into more than 7 articles
- ✚ Dactyla of the last 3 pair of pereopod is shorter than propodus

## *Nematopalaemon tenuipis*

**Trade name: Spider Prawn**



### **Identification Characteristics:**

- ✦ Rostrum straight and longer than carapace with an elevated basal crest of 5-7 teeth on the dorsal side
- ✦ Teeth is present both in the ventral and dorsal side
- ✦ Second abdominal segment overlaps first and third segments
- ✦ Pleura of the 5th abdominal segment is rounded
- ✦ Only first two pereopods are chelated and third pair of pereopod without pincer
- ✦ 2nd pair of pereopod with long pincers and the carpus is not subdivided
- ✦ Dactyla of the last 3 pair of pereopod is much more larger than propodus and thread like



## REFERENCE

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